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Lottery game

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## LOTTERY GAME

### BACKGROUND OF THE INVENTION

#### Field of the Invention

5 This invention relates to lottery and Keno-type games, herein referred to collectively as lottery games. The invention is applicable in a variety of different areas of gaming, such as dedicated user-operable stand-alone machines, on-line systems in which each user operates his own terminal, and public systems comprising geographically-distributed terminals each of which can be used by members of the public.

#### 10 Description of the Prior Art

The operators of lottery games have attempted in the past to increase the attraction of the games to prospective players using a variety of different techniques. However, a difficulty faced by the operators is that player-interest tends to be transient and quickly fades. Whenever the result of a lottery game is made known, the losing players quickly become discouraged.

15 It would be desirable to provide an improved lottery game in which the interest of the players is maintained, and even enhanced, over a relatively long period, even for players with losing results.

### SUMMARY OF THE INVENTION

20 Aspects of the present invention are set out in the accompanying claims.

According to a further aspect of the invention, a lottery game systems comprises main lottery games which are collected into groups. The individual games within each group are played sequentially, and if desired in a manner

which is known *per se*. Thus, for example, for a particular game each player may select a group of symbols, such as numbers, from a larger set. A game result is then obtained by randomly selecting symbols, and the results of the game for a player will depend upon how many of the symbols he has selected  
5 match the randomly-selected symbols.

According to this further aspect of the invention, however, players also take part in one (or preferably more) bonus games. Each bonus game involves the comparison between (a) a random bonus game set formed by choosing symbols from the various results for the group of main games, and  
10 (b) a player's bonus game set, which is formed by symbols chosen from the various sets selected by the player for the main games. Thus, for example, a player will win a bonus game if his bonus game set (consisting of one symbol from each of the sets he chose for the respective main games) matches the random bonus game set (consisting of one of the symbols from each of the  
15 result sets for the different main games).

As a result of this arrangement, even though a player may lose a main game, his interest is nevertheless maintained because he knows that he may, when the group of main games has been completed, win a bonus game. The fact that the main games are played progressively extends the period of  
20 interest and suspense. Also, any favourite numbers he has selected for a particular main game may represent losing numbers for that game, but winning numbers for the bonus game, so that enhanced enjoyment is provided

by avoiding the disillusionment accompanying the recognition that favourite numbers have been unsuccessful.

In order to compile the random bonus game set, it is necessary to choose particular symbols in different randomly-selected main game results. Preferably, only one symbol is selected from each main game result. In order to facilitate understanding of the game, and to avoid suspicions of improper symbol selection, preferably the bonus game set consists of symbols chosen in a systematic way from each of the random main game sets. In accordance with a further aspect of the invention, the symbols within each main game result set form a sequence, and a bonus game set is made up of symbols from the main game result sets which are in corresponding positions in the sequences. Thus, if the symbols are numeric, the symbols within each main game result set could be arranged in numerical order, and the bonus game set could be formed from a combination of the lowest numbers of the respective main game sets. Alternatively, the symbols within each main game result set could be considered to be in the order in which they were randomly selected, and a bonus game set could be formed by combining the first-selected symbol from each of the main game result sets. (In the latter case, each main game preferably involves indicating to the players the order in which the symbols are randomly selected.)

Preferably, the symbols forming a player's bonus game set are selected in a corresponding manner. That is, each of the player-selected main game sets comprises symbols in a sequence, and a bonus game set for the player

comprises symbols from his different main game sets which are located at corresponding positions within the sequences. However, this is not essential; the player could choose specific symbols within his different main game sets to form a bonus game set.

5            Preferably, each group of main games corresponds to multiple bonus games. Thus, each bonus game set may comprise a single symbol from each main game set, so that the number of bonus games may be equal to the number of symbols within each main game set.

10           The number of symbols within each bonus game set may also correspond to the number of main games within the main game group. This also however is not essential: some main games within a particular group may not contribute towards the bonus games, and/or other main games may contribute more than one symbol to a particular bonus game set.

15           It will be appreciated from the foregoing that the number of symbols within a bonus game set may not be equal to the number of symbols within a main game set. Accordingly, the requirements for winning a main game, and the amounts won, may differ from those for a bonus game. For example, more or fewer matching symbols may be required for the minimum win.

20           Certain of the randomly-selected symbols may be treated as "wild card" symbols for the purpose of the bonus games. That is, any symbol of a player's set may, for the purpose of the bonus game, be regarded as matching a wild card symbol. Preferably, the choice of which symbols are to be regarded as wild card symbols is not made (or is not announced to the player)

until after the main game group has been completed. In this way, as the main games are progressively completed, the player's interest can be maintained even if he finds that his bonus game sets contain relatively few matching symbols.

5           The present invention comprises a complete system for playing a lottery game, including means allowing a player to select his symbols, means for presenting to the player the randomly-selected symbols and means for computing whether the player has won a main game or a bonus game. The invention also extends to elements of such a system which are specifically  
10           arranged to enable or facilitate the operation of the system, such as the computing means which computes the main game and bonus game wins, entry means for accepting player-selections and for representing those selections in a manner that facilitates the viewing of the player's main game sets and bonus game sets, presenting means for displaying the randomly-  
15           selected symbols in a manner permitting the main game result sets and random bonus game sets to be readily perceived, etc.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Arrangements embodying the invention will now be described by way of example with reference to the accompanying drawings, in which:

- 20           Figure 1 shows a gaming machine in accordance with the invention;
- Figure 2 illustrates by way of an example a display provided by the machine of Figure 1;
- Figure 3 is a schematic illustration of an on-line gaming system in accordance with the invention;

Figure 4 is a schematic illustration of a public-terminal lottery system in accordance with the invention;

Figure 5 shows an example of a ticket dispensed by a terminal of the system of Figure 4; and

5        Figure 6 represents a display broadcast to players of the system of Figure 4.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to Figure 1, a gaming machine 2 is arranged to receive coins and tokens through slots 12 and 14, and to deliver coins or tokens to a tray 18  
10 if a player wins a prize. Provision may be made for payment or prizes to be in other forms than cash or tokens, for example by use of a credit or debit card.

The machine 2 also has two video screens, 20, 30 which in this embodiment are both screens of cathode ray tube monitors. As will be described, these provide displays of various game features, including  
15 simulated symbol-carrying reels. Other types of electrically alterable display screens can be used, such as LCD or projection displays, and indeed at least some of the game features could be embodied in electro-mechanical arrangements.

The machine 2 also has various push-buttons 28 allowing the player to  
20 initiate various operations and make various selections in order to play a game. Figure 1 shows these as physical push-buttons operating electrical switches, but some or all could alternatively be replaced by display areas of the screens 20, 30, the player being able to provide instructions to the machine



by selecting these display areas, which can be achieved either by movement of a cursor or, preferably, by physically touching the display areas, for which purpose the screens 20, 30 are preferably touch screens.

Gaming machines having touch-responsive video screens by means of which players can play games, are very well known in the art, and anyone skilled in the art will be easily capable of designing and constructing the necessary hardware. Furthermore, the software techniques required to produce the necessary displays and to operate the games are well known to those skilled in the art, and the necessary modifications required in order to provide the displays and games described below will be clear. Also, other means may be provided for player operation, such as voice actuation.

Referring to Figure 2, this schematically illustrates an example of the displays that can be provided by the screens 20, 30. This includes two main display areas 200, 300, which illustrate the displays provided by the screens 20, 30 respectively. For the purposes of Figure 2, it is assumed that the physical switches 28 of Figure 1 are replaced by display screen areas.

The main area 300 includes an input area 302 in which are displayed a number of simulated push-buttons by means which the player can instruct the operation of the machine. For example, the area allows the player to select the number of games to be played, the amount of stake placed on each game, whether any winnings are to be collected or are to remain available as stakes for succeeding games, whether he wishes the machine automatically to select

symbols for his use (so that the player does not need to select them manually), etc.

5 A summary indication area 304 includes sub-areas displaying information concerning the consequences of the instructions received from the player and the results of games played by the player, such as the amount of credit owed to the player, the number of games selected, the amount of stake bet on each game, the total amount which is being bet and the total amount which has been paid out to the player.

10 A symbol selection area 306 allows the player individually and sequentially to select symbols for forming player-selected sets for use in the games.

The main area 200 comprises a player selection region 202 and a machine selection region 204. These regions respectively display player-selected and machine-selected symbols relating to a group of main games (a group in this embodiment consisting of five main games). Within each region, the symbols are displayed in an array, with the symbols for each main game forming a respect column. There are five symbols for each main game, and the symbols are displayed from bottom to top in the order in which in they are selected. The sets of main game symbols are arranged from left to right in the order in which the main games are played.

20 Each set of symbols formed by a respective row of the array constitutes a bonus game set for the player (within the region 202) or for the machine (within the region 204), as will be explained below.

A single main game can be played as follows.

In an initial state of the machine, the regions 202 and 204 are empty of displayed symbols. The player operates a simulated button within the region 302 to indicate that he wants to play a first main game and to select the amount of stake to be placed on the game. He then uses the region 306 to select five symbols in succession (the symbols in this embodiment being numerical). As he selects each symbol, a corresponding symbol is added to the region 202 within the left-most column corresponding to the main game, starting at the bottom and progressing upwardly. Each time a particular symbol has been selected, the indicia corresponding to that symbol within the region 306 changes state (e.g. is illuminated at a lower intensity), to indicate that the symbol cannot be selected again within that main game. In other words, it is ensured that all the player-selected symbols for a particular main game are different, by using a "without replacement" selection scheme. (The states of the indicia are reset at the beginning of each main game, so that the player can select the same symbols as were selected in a preceding game, although again within a single game the selected symbols must be unique.)

After he has selected his five symbols, the player then uses the region 302 to initiate the machine symbol selection operation. The machine then selects five symbols at random, using a without replacement selection operation, each selected symbol then being shown in turn, starting from the bottom, within the left-most column of region 204 corresponding to the first main game. (Preferably, each time a symbol is selected by a player or by the

machine, the area 200 shows that symbol as a simulated ball dropping on to the top of the respective column.)

5 The machine computes a win on the basis of comparing the player-selected symbols represented in the left column of region 202 with the machine-selected symbols represented in the left column of region 204. The machine will then award a win in dependence upon the number of matching symbols, as in a standard lottery or Keno game. The amount won will be dependent upon the number of matching symbols. An indication in area 206, region 202, above the column, shows the amount which could be won (or the amount by which the stake is multiplied to form the winnings) if all five  
10 symbols match.

This operation can be repeated in order to play successive main games, using respective different columns within the regions 202 and 204.

15 If a player elects to play all five main games within a group, he is automatically awarded five free bonus games. In this case, immediately after the fifth game has been played, the machine indicates the results of the bonus games by comparing player-selected bonus game sets with machine-selected bonus game sets.

20 Thus, for example, a player's bonus game set formed by the five lowermost symbols in the columns of region 202 are compared with the corresponding row of symbols in the region 204, and a win is awarded in dependence on whether there are matching symbols in the two sets. The amount of the award will depend upon the number of matching symbols and

the total amount of stake placed on the five main games. Similarly, wins can result from other player-selected bonus sets formed by the remaining rows in the region 202, which are compared with the corresponding rows in the region 204. The amount which could be won if all five symbols within each bonus game set are found to match is represented by displays at the ends of the  
5 respective lines within an area 208.

It will be noted that within each bonus game set, either a player-selected set or a machine-selected set, the same symbol may occur more than once. This influences the odds of a given number of symbol-matches  
10 occurring.

Preferably, a certain number of the machine-selected symbols are considered as wild card symbols for the purpose of calculating bonus game wins. Thus, a wild card symbol, irrespective of its actual value, will be deemed as matching any single player-selected symbol. In this way, the odds  
15 of winning the game can be influenced so as to make the game more attractive to the player. Furthermore, as the main games are progressively played, a symbol which the player had previously regarded as a losing symbol for bonus game purposes could contribute to a winning bonus game set.

The selection of symbols to be treated as wild card symbols can be  
20 achieved in a variety of different ways. For example, a number could be selected at random, and any symbols corresponding to that number can be treated as wild cards. In the illustrated preferred embodiment, however, a

symbol is treated as a wild card if there is a subsequent symbol of the same value within the same bonus game set.

It will be noted that the symbols within each bonus game set are dependent not only upon the symbols selected by the player for the main  
5 games, but also the order in which those symbols were selected, thus adding to the interest of the game.

Figure 3 shows an on-line gaming system for playing the game described with reference to Figure 2. A game server 400 can be accessed via the internet schematically illustrated at 402 by multiple user terminals 404.  
10 Each user terminal 404 comprises user-entry means 406 (preferably including a keyboard and a mouse), a processing means 408 and a display 410. The processing means 408 includes user game software schematically illustrated at 412, which communicates with server software 414.

The server software 414 comprises a random number generator 416,  
15 machine symbol selection means 418 responsive to the generated random numbers for randomly selecting symbols and for transmitting data representing symbols to the user game software 412, player symbol selection receiving means 420 for receiving from the user game software 412 data representing the symbols selected by the player, and win calculation means  
20 422 for comparing the machine symbols with the player-selected symbols, for calculating any winnings and for transmitting these to the user game software 412.

The user game software 412 responds to operation of the user entry means 406 and data received from the server software 414 for (a) transmitting player symbol selection data to the server software 414, and (b) determining the contents of an image to be displayed on the display 410, which contents may correspond to the display areas 200 and 300 of Figure 2.

The present invention extends to server software 414 and to a server programmed with such software, and also to user game software 412, and a terminal programmed with such software.

The system need not be an on-line system. It could form what is known as a Central Gaming Server arrangement, with the terminals (which may or may not be on a single site) possibly coupled directly to the server.

Referring to Figure 4, this shows a public-terminal lottery system which can play a game similar to that described with reference to Figure 2. The system comprises terminals 500 coupled by a communication system generally indicated at 502 to a lottery computer 504.

Each terminal 500 is arranged to accept stakes from players (using either cash-receiving means 520 or credit-card reading means 522). Each terminal also has entry-means permitting a user to enter a selection of symbols. This may take the form of a keyboard which permits the user to enter his symbol selections sequentially (as in the on-line system of Figure 3). In the preferred embodiment, however, a player selects symbols by marking a play slip carrying indicia representing the symbols, and then feeds the play slip into a slip reading means 540 which is capable of reading the markings.

It will be noted that in this arrangement, there is no way in which the player can indicate the sequence in which he has made his symbol selections.

The terminal 500 then issues a lottery ticket, via ticket issuing means 542. A ticket is shown by way of example in Figure 5. The ticket displays the player's selected numbers in a rectangular array, with the symbols for each main game being arranged in a respective one of the column 560. In this embodiment, the symbols within each column are arranged in numerical order, rather than in the order in which they were selected.

The lottery terminal 500 thus presents to the player a representation of his symbol selections arranged in such a manner that he can readily perceive the main game sets (which are arranged in vertical columns 560) and the bonus game sets (which are in horizontal rows 562).

Machine-readable indicia, such as shown at 570, containing information representing the selected symbols, are also printed on the ticket.

Referring again to Figure 4, a random number generator 506 is used for random selection of symbols. The random number generator 506 could form part of the computer 504, or could be a separate device, such as a physical ball selector. Data representing the selected symbols is provided to the computer 504; this can be achieved in a number of different ways, such as automatically and electronically, or by manually entering the data.

The lottery computer 504 compares the symbol selections made by multiple players and communicated to the computer 504 via the communications link 502 with the randomly-selected symbols, and



determines which players have won, and the amounts won by the players (which in this case will depend upon the total amount staked by the players).

5 Data representing the symbols randomly selected by the random number generator 506 is also transferred to a presentation means 508, either directly from the random number generator 506 or from the lottery computer 504. The means of transfer may again be automatic and electronic or manual. The presentation means is arranged to cause the production of a display as will be described below which facilitates the recognition of the randomly-selected symbols forming the main game sets and those forming the bonus  
10 game sets. The presentation means 508 can take a variety of forms (and may indeed form part of the lottery computer 504). However, in the preferred embodiment, the presentation means 508 comprises software responsive to the randomly-selected symbols for constructing data representing a display image of a predetermined format, in which the randomly-selected symbols are  
15 displayed in an array. The image could then be publicly shown, for example through a television broadcast network.

The lottery game rules, and the requirements for winning, correspond to those described with reference to Figure 2. In this case, each main game is played on a different day, and each main game group comprises seven main  
20 games. Whenever each main game is played, the corresponding randomly-selected numbers are displayed to the public using the presentation means 508. After a full week's games, the presentation means 508 may produce an image such as that shown by way of example in Figure 6. It will be noted that

this is similar to the display in the region 204 of Figure 2. The randomly selected symbols are arranged in columns 620 corresponding to the respective main games. The jackpot winnings (the amount to be shared by players which have a full set of matching symbols) for each main game are shown at  
5 the top of the respective column in a region 622. If the jackpot is not won, it is "rolled over" and added to the jackpot for the following day.

The jackpot winnings for the bonus games are shown at the right of the respective lines containing the bonus game symbols, in a region 624. Each set of main game symbols comprises six symbols, so that at the end of  
10 the week six bonus games are completed simultaneously. If the jackpot for a particular bonus game is not won in that week, then the amount is rolled over and added to the corresponding jackpot for the following week.

Wild card symbols can be selected as in the embodiment of Figure 2. Again, numbers within each main game set are selected without-replacement,  
15 but bonus game sets can contain the same symbol more than once.

The lottery computer 504 sends data regarding the results of the games to the terminals 500. The data preferably comprises the randomly-selected numbers, and the sequences in which they were selected. Each terminal can read, using slip reading means 540 or a separate reader, the machine-readable  
20 indicia 570 on tickets inserted by players. Each terminal is also operable to determine whether any ticket carries symbols corresponding to a win on any of the main games or bonus games. The terminal can then provide a display, or issue cash or a voucher, in dependence on the results of this determination.

In this embodiment, therefore, each terminal 500 and the lottery computer 504 can independently compute (based on information representing the player- and randomly-selected symbols, and the sequences in which they were selected) the player bonus game sets and the random bonus game sets.

5 Each can also compare player bonus game sets with random bonus game sets to determine whether there are bonus game wins. However, this is not necessary. In some arrangements, the server may not need to compute bonus game wins. In other arrangements, the terminals may obtain from the server information identifying winning tickets, rather than perform the computations

10 themselves.

Another advantage of the lottery game described with reference to Figures 4 to 6 is the ability of the lottery operator to sell scratch cards throughout the week in which the main games are played for the purpose of gambling upon the bonus games.

15 In all the arrangements described above, it is advantageous for the symbols within each main game set (both the player-selected set and the randomly-selected set), to be arrangeable in a known sequence, so that there is no ambiguity with regard to the members of the different bonus game sets. As indicated above, the sequence could correspond to the order in which the

20 symbols are selected. Alternatively, if the symbols themselves are selected from a larger set which have an accepted sequence, for example if they are numeric or alphabetic or representative of playing cards, they can be arranged in this sequence.

Reference herein to random selection are intended to cover also pseudo-random, i.e. deterministic, selection in a manner that is generally difficult to predict, as well as non-deterministic, e.g. chaotic, selection.

5 The player-selected symbols and the randomly-selected symbols are preferably displayed in arrays as described above, although it is to be noted that the main games and bonus games could be arranged in lines and columns, respectively, rather than columns and rows, as described above.

10 The invention can be embodied in any form other than those described herein, even in arrangements whose primary purpose is not game-playing, such as mobile phones or palmtop computers.

## CLAIMS:

1. A lottery game system for enabling the playing of main games and bonus games, the system comprising:

5 enabling means for enabling a player to select a plurality of main game sets of symbols, each set comprising a sequence of symbols used in a respective main game;

10 presenting means for causing randomly-selected symbols to be displayed in an array, the symbols of the array being arranged in main game sets each corresponding to a respective main game, and the symbols within each set being arranged in a predetermined sequence; and

calculating means, the calculating means being operable to calculate a main game win for a player by comparing the player-selected main game set for that game with the randomly-selected main game set for that game;

15 wherein the calculating means is also operable to calculate a bonus game win for a player by comparing a bonus symbol set formed by the symbols at a predetermined position in the sequences of the player-selected main game sets with a random bonus game set formed by the symbols at a predetermined position in the sequences of the randomly-selected main sets.

20 2. A system as claimed in claim 1, wherein each randomly-selected main game set comprises N symbols, and wherein the calculating means is operable to calculate wins for N bonus games, each bonus game involving a respective random bonus game set comprising the symbols at a

respective predetermined position in the sequences of the randomly-selected main game sets.

3. A system as claimed in claim 1 or claim 2, in combination with  
5 a random symbol selection means for randomly selecting the symbols to be displayed, the random selection means being arranged to select each main-game set using a "without replacement" procedure from a predetermined larger set, whereby the possibility of duplicate symbols within a main game set is avoided, while duplicate symbols may appear within bonus game sets.

10

4. A system as claimed in any preceding claim, wherein, within each randomly-selected main game set, the symbols are displayed in a sequence corresponding to the order in which they were selected.

15 5. A system as claimed in any one of claims 1 to 3, wherein the symbols within each randomly-selected main game set are alpha-numerical, and are arranged within each set in alpha-numerical order.

20 6. A system as claimed in any preceding claim, including means for selecting symbols to be treated by the calculating means as wild card symbols for the purpose of calculating bonus game wins.

7. Gaming apparatus incorporating a lottery game system as claimed in any preceding claim, the apparatus comprising:

5 a user interface comprising input means operable by the user for sequentially selecting symbols to form main game sets, each main game set comprising symbols selected from a predetermined larger set, and display means for displaying player-selected symbols and randomly-selected symbols; and

10 processing means for selecting said randomly-selected symbols, said processing means further incorporating said calculating means for calculating the main game and bonus game wins by comparing the player-selected symbols with the randomly-selected symbols.

8. A stand-alone gaming machine comprising gaming apparatus as claimed in claim 7, and a housing supporting the user interface and the processing means.

9. A multi-terminal gaming system comprising gaming apparatus as claimed in claim 7, the multi-terminal system comprising a server formed by said processing means, and a plurality of user terminals each comprising a respective user interface.

10. An on-line gaming system comprising a multi-terminal gaming system according to claim 9, in which the terminals are remotely located with respect to each other.

5 11. Computer apparatus programmed to operate as a server for a multi-terminal system as claimed in claim 9.

12. Computer apparatus programmed to operate as a terminal for a multi-terminal system as claimed in claim 9.

10

13. A system as claimed in any one of claims 1 to 6, comprising:  
multiple geographically-distributed ticket terminals each forming a respective enabling means and each operable to issue a ticket which displays player-selected symbols in an array such that the symbols of each main game set are displayed in a predetermined sequence, with the symbols at  
15 corresponding positions within the sequences of the main game sets being aligned; and

processing means incorporating the calculating means and operable to receive from the terminals data representative of player-selected symbols.

20

14. A ticket terminal suitable for use with a lottery game system according to claim 13.



15. A ticket terminal as claimed in claim 14, having means for reading a previously-issued ticket, and for determining in response thereto whether the symbols chosen for that ticket correspond to a bonus game win.

5 16. A ticket terminal as claimed in claim 15, wherein the terminal is operable to receive data representing the randomly-selected symbols and the sequence in which they were selected to calculate a random bonus game set.

10 17. A ticket terminal as claimed in any one of claims 14 to 16, wherein the symbols are alpha-numeric, and wherein the terminal is operable to issue a ticket in which the symbols within each main game set are arranged in alpha-numerical order.

15 18. A ticket terminal as claimed in any one of claims 14 to 16, comprising user-operable input means permitting a user to select symbols sequentially, the terminal being operable to issue a ticket in which the symbols within each main game set are arranged according to the order of selection.

20 19. Computer apparatus for a system as claimed in claim 13, the computer apparatus comprising said processing means.

## ABSTRACT

A lottery game involves a group of individual main games each of  
5 which results in a win in dependence upon the number of matches between  
the symbols selected by a player and a randomly-selected set of symbols, In  
addition, there are bonus games which are won in dependence upon the  
correspondence between the bonus game sets of an individual player (each  
formed by symbols in corresponding positions within the sequences of his  
10 main game sets) and randomly-selected bonus game sets (each formed by  
symbols at corresponding positions within the different randomly-selected  
main game sets).

FIG. 1

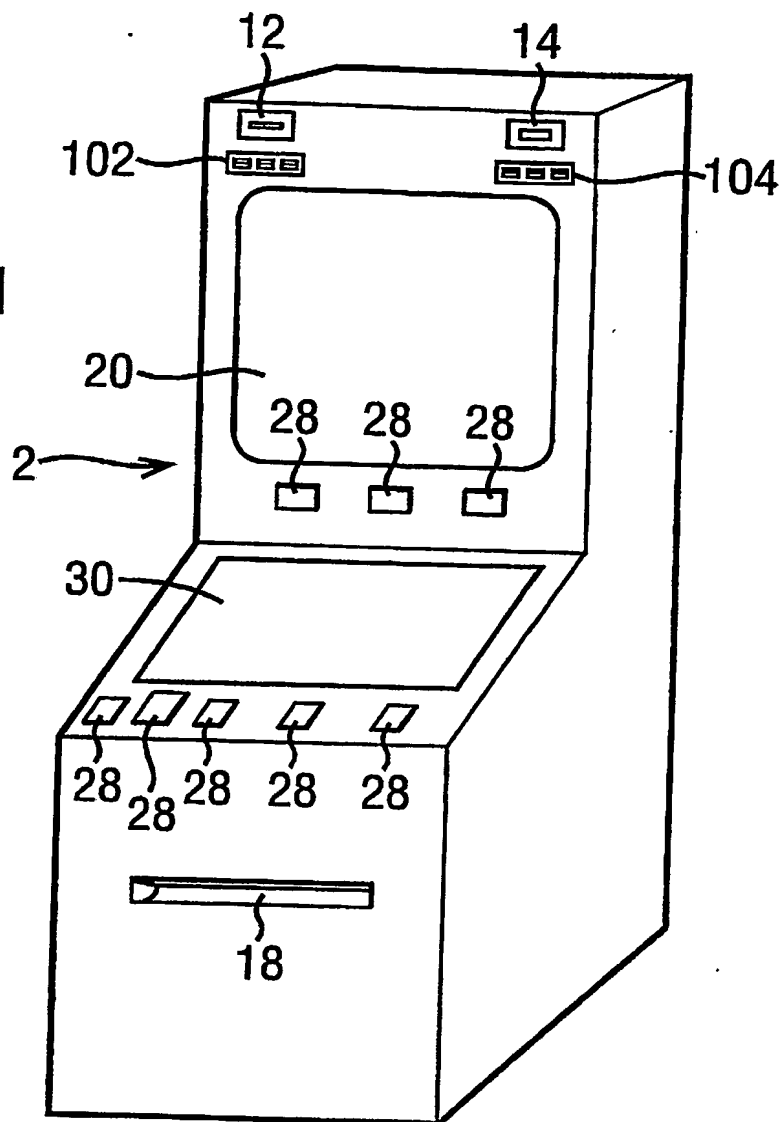
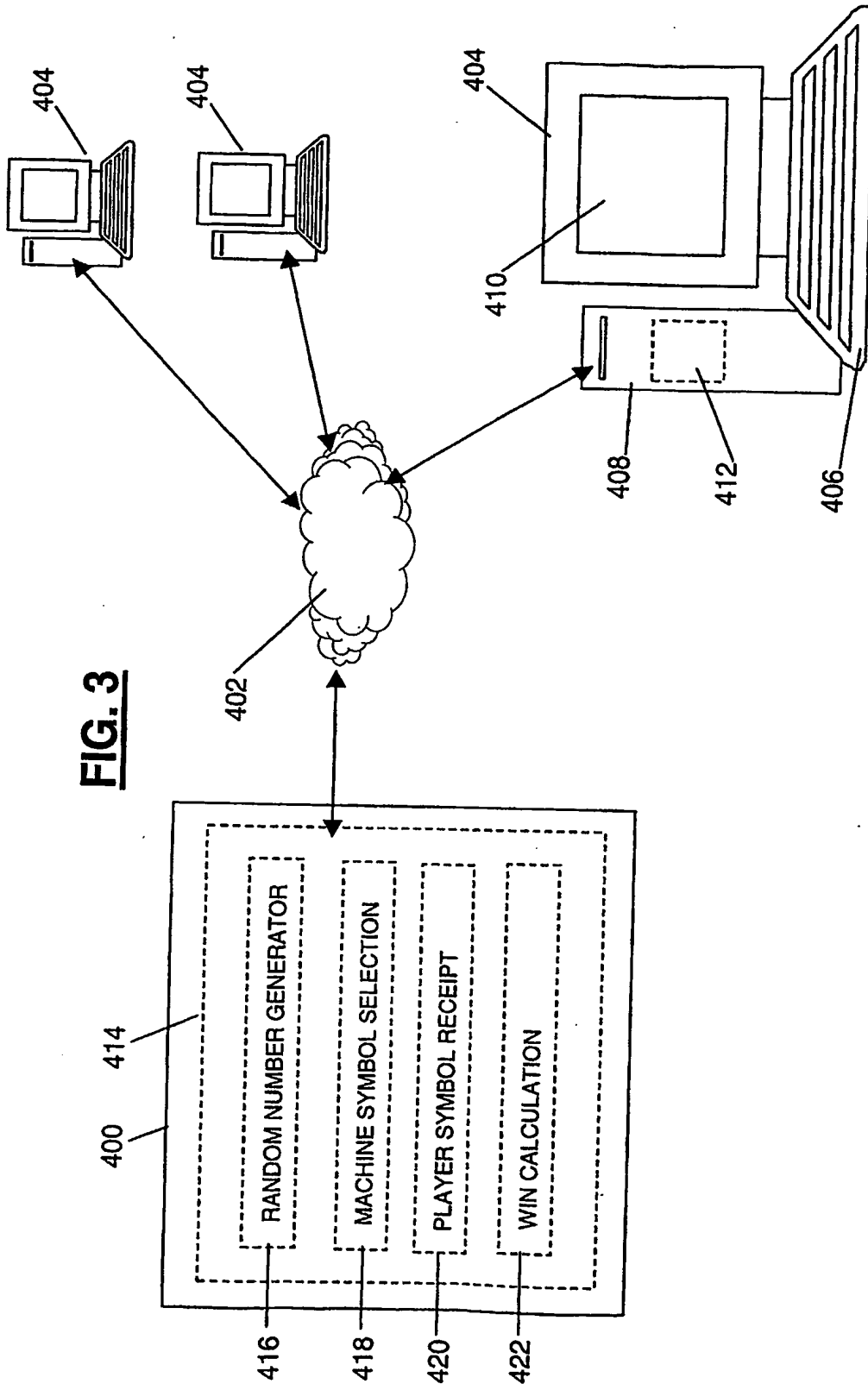
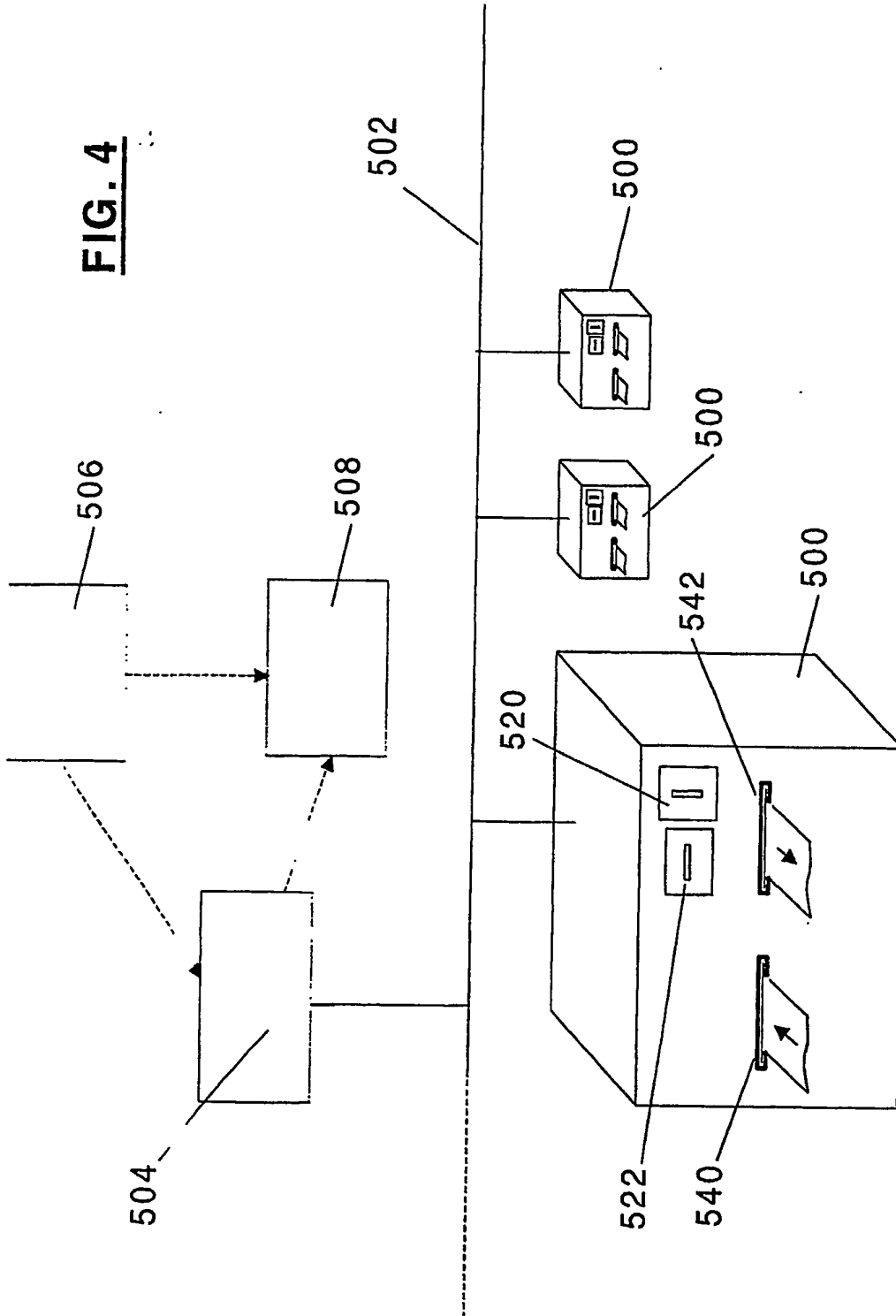


Fig. 2

**FIG. 3**



**FIG. 4**



516.5

[illegible]





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